DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed March 2, 2010 have been fully considered but they are not persuasive. Regarding claim 20, the applicants' representative asserts that Kupershmidt and Shvodian cannot be combined because they are directed to different MAC protocols. The examiner respectfully disagrees. Shvodian and Kupershmidt disclose superframes in a TDMA system in a wireless network (figs. 5 and 6, col. 5, lines 43-47, col. 6, lines 33-40 and lines 63-67, col. 7, lines 1-10 of Shvodian discloses the superframe with a beacon period; fig. 2, col. 1, lines 57-66 and col. 2, lines 1-10 of Kupershmidt discloses a beacon period that comprises beacon slots 14 for the devices of the personal area networks 10 and 20 in figure 1 to transmit information). Kupershmidt is applied to the Shvodian by having multiple beacon slots for the wireless devices to transmit information during the beacon period, and not the MAC protocol, as the applicants' representative asserts.

The applicants' representative also asserts that Benveniste does not disclose announcing a sleep start time and sleep duration period in a beacon Hibernation information element, and in addition, Benveniste cannot be combined with Kupershmidt. The examiner respectfully disagrees and maintains that the temporal period and suggested offset transmitted in a message from the wireless device, station 202-i, in the wireless network discloses when the station 202-i will enter a doze state and when it will wake up, and thus reads on the applicants' claimed limitation of "transmitting a beacon hibernation information element announcing a sleep start time and a sleep period

duration; and hibernating in a hibernation mode during the announced sleep period duration, wherein a hibernating device does not transmit a beacon during the sleep period" because the message transmitted by the temporal period and suggested offset transmitted in a message from the wireless device, station 202-i when received by a device (claim 20 is directed to devices in a wireless network, without specific disclosing wireless devices or access points, thus the wireless network of Benveniste clearly reads on the applicants' limitation) in a wireless communication network clearly identifies when a wireless device will go into sleep/doze state, and when it will wake up. The examiner also maintains that the teaching of Benveniste disclosed above is not been applied to the network of Kupershmidt, but Shvodian as modified by the teaching Kupershmidt disclosed above. Therefore, Shvodian, as modified by the teaching of Kupershmidt and Benveniste as disclosed above reads on all of the applicants' claimed limitations. The 35 U.S.C. 103(a) rejections of claims 3-5, 8, 10,-13, 15 and 20 are maintained.

Allowable Subject Matter

2. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 16-19 are allowed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 3-5, 8, 10, 11, 12, 15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shvodian et al 7,127,254** (**hereinafter Shvodian**) in view of **Kupershmidt 7,496,064** and **Benveniste 20040264397** (**hereinafter Benveniste**).

Regarding **claim 20**, Shvodian discloses a method for saving power in a wireless communication network (network 300, col. 2, lines 21-28) including a plurality of devices (320, see col. 2, lines 24-28), comprising: diving time into a sequence of at least one superframe (dividing available transmission time into a plurality of superframes 610, see fig. 6, col. 6, lines 63-67) having at least one beacon period (beacon period 510, 620, see figs. 5 and 6, col. 6, lines 32-40, col. 7, lines 5-10); defining a sleep period as a plurality of superframes (assignment of awake superframes such that each device 320 is in sleep mode for 3 superframes, wherein it doesn't have to be 3, see col. 11, lines 7-23 and lines 41-49).

Shvodian does not specifically disclose grouping beacons of different devices into at least one beacon period.

Kupershmidt however discloses in a wireless network (see fig. 1, col. 1, lines 57-65), grouping beacons of different devices into at least one beacon period of a TDMA superframe (beacon slots 14 of TDMA frame 30, see figs. 1 and 2, col. 1, lines 66-67, col. 2, lines 1-9).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kupershmidt into the system of Shvodian having a plurality of beacon slots on the beacon period of the superframe for the benefit of synchronizing the devices to the superframe.

Shvodian as modified by Kupershmidt does not specifically disclose transmitting a beacon hibernation information element announcing a sleep start time and a sleep period duration; and hibernating in a hibernation mode during the

announced sleep period duration, wherein a hibernating device does not transmit a beacon during the sleep period.

Benveniste however discloses a method for saving power in a wireless communication network including a plurality of devices, comprising: transmitting a beacon Hibernation Information Element (transmitting a temporal period and suggested temporal offset, see fig. 7, p.5, [0069]) announcing a sleep period start time and a sleep period duration (the transmitted temporal period and temporal offset is used to indicate when the station 202-i will go into the doze state and when it will "wake-up", see p.5, [0069], [0071], [0073]); and hibernating in a hibernation mode during the announced sleep period duration, wherein a hibernating device does not transmit a beacon during the sleep period (station 202-i entering a doze state, see fig. 7, p.1, [0010], p.5, [0072]-[0073]).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Benveniste into the system Shvodian as modified by Kupershmidt by transmitting from a first device to other devices in a wireless network a message indicating a start and end time for the first device to go into a sleep period for the benefit coordinating delivery of frames to the first device.

Regarding **claim 3** as applied to claim 20, Shvodian as modified by Kupershmidt and Benveniste disclose the claimed limitation. Benveniste further discloses periodically waking up the hibernating device to listen for beacons other devices (see fig. 7, p.5, [0073]-[0074]); and returning the hibernating device to the hibernation mode if other

devices have indicated no pending traffic for the hibernating device in their beacons (see p.1, [0019]).

Regarding **claim 4** as applied to claim 20, Shvodian as modified by Kupershmidt and Benveniste disclose the claimed limitation. Benveniste further discloses keeping information on the presence of a beacon of the hibernating device in beacons of other devices during the announced sleep period duration of the hibernating device (access point buffers downlink frames for station 202-I during the doze period, see p.4, [0066], p.5, [0074]).

Regarding **claim 5** as applied to claim 20, Shvodian as modified by Kupershmidt and Benveniste disclose the claimed limitation. Benveniste further including the address of a device transmitting the beacon Hibernation Information Element in a beacon transmitted by another device in one of an information element and field when the other device has pending data for delivery to the transmitting device (beacon including TIM to inform the station 202-i that there are downlink frames addressed to station 202-i waiting to be transmitted to the station, see p.1, [0015], [0018]); and maintaining the transmitting device in an active mode if a beacon with one of an information element and field including pending data for the transmitting device is received before the transmitting device hibernates (station 202-I stays in the wake up state to receive the downlink frames, see p.1, [0018]-[0019]).

Regarding **claim 8** as applied to claim 20, Shvodian as modified by Kupershmidt and Benveniste disclose the claimed limitation. Shvodian further discloses wherein the sleep period start time is a number of future superframes relative to a current

superframe (assignment of awake superframes such that each device 320 is in sleep mode for 3 superframes, wherein it doesn't have to be 3, see col. 11, lines 7-23 and lines 41-49).

Regarding **claim 10** as applied to claim 20, Shvodian as modified by Kupershmidt and Benveniste disclose the claimed limitation. Shvodian further discloses wherein the method of further comprises: including in the Hibemation Information Element a periodicity of the sleep period, wherein the periodicity is a sum of a number of superframes that the device will be in the hibernation mode and a number of superframes the device will be in an active mode (assignment of awake superframes such that each device 320 is in sleep mode for 3 superframes, wherein it doesn't have to be 3, see col. 11, lines 7-23 and lines 41-49), wherein the active mode is defined as the device not being in the hibernation mode (see col. 11, lines 7-23 and lines 41-49).

Regarding **claim 11** as applied to claim 20, Shvodian as modified by Kupershmidt and Benveniste disclose the claimed limitation. Benveniste further discloses announcing when a device in an active mode has pending data to transmit to at least one intended receiver device, the pending data by including a Traffic Indication Map Information Element in a beacon of the device wherein the Traffic Indication Map Information Element that comprises at least the device addresses of the at least one intended receiver device of the pending data (beacon including TIM to inform the station 202-i that there are downlink frames addressed to station 202-i waiting to be transmitted to the station, see p.1, [0015], [0018]).

Regarding **claim 12** as applied to claim 20, Shvodian as modified by Kupershmidt and Benveniste disclose the claimed limitation. Benveniste further discloses entering a device into a sleep state during a superframe when the device is in an active mode and when there are no pending data transmissions for the device that are announced in the beacons of other devices (immediately going into doze state when their no frames for the station, see p.1, [0019]); and waking up the device from the sleep state at the beginning of each beacon period (device wakes up at the wake time specified by the start of a beacon period, see p.2, [0019]).

Regarding **claim 13** as applied to claim 20, Shvodian as modified by Kupershmidt and Benveniste disclose the claimed limitation. Benveniste further discloses entering a device into a sleep state during a superframe when the device is in an active mode and when the device has sent and received all data pending in the current superframe (immediately going into doze state when their no frames for the station, see p.1, [0019]); and waking up the device from the sleep state at the beginning of each beacon period (device wakes up at the wake time specified by the start of a beacon period, see p.2, [0019]).

Regarding **claim 15**, Shvodian as modified by Kupershmidt and Benveniste disclose the claimed limitation. Benveniste further discloses a communications network including a plurality of devices (stations 202-1 to 202-N, see fig. 2, p.2, [0034]) that save power by announcing hibernation in their beacon frames by performing the power-saving method of claim 20 (see p.5, [0069], [0071], [0073]).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLUMIDE T. AJIBADE AKONAI whose telephone number is (571)272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OA

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